LISTING OF CLAIMS:

1. (Currently amended) A brush-less resolver comprising:

a stator having a central axis;

a rotor at least partially disposed within said stator and rotatable relative to said stator about said axis; and,

a resolver section operatively disposed between said stator and said rotor, said resolver section including:

excitation signal transmitting means for transmitting a resolver excitation signal from~~ the~~ said stator~~-side~~ to~~ the~~ said rotor~~-side~~ in a non-contact manner; and,

~~a resolver section for ~~excitation signal modulating means for modulating said resolver excitation signal corresponding to~~ the~~ a rotation angle to be detected between said stator and said rotor~~,~~

~~wherein said resolver section also serves as said excitation signal transmitting means~~.

2. (Currently amended) The brush-less resolver according to claim 1, wherein said ~~resolver section is constructed of a set of a ~~rotor includes~~ which has a slot and is made up of~~ a rotor iron core having~~ provided with~~ a rotor coil~~ (also referred to as "rotor coil")~~ operatively connected with said rotor iron core, and~~ a~~ said stator~~ which has a slot and is made up of~~ includes a stator iron core ~~provided with ~~and a stator coil~~ (also referred to as "stator coil")~~ operatively connected with said stator iron core.

3. (Currently amended) The brush-less resolver according to claim 2, wherein said stator coil~~ comprises~~ includes a stator excitation coil section and a stator output coil section, said stator excitation coil section capable of being~~ which is a coil~~ excited by an associated AC voltage for transmitting~~ a~~ said resolver excitation signal from said stator to said rotor,~~ and a~~ said stator output coil section~~ which is a coil for~~ outputting a signal corresponding to~~ the~~ said rotation angle to be detected and appearing on said rotor[[,]];

said stator excitation coil section and said stator output coil section~~ are provided on the same single~~ being operatively connected to said stator iron core[[,]];

said rotor coil~~ constitutes~~ including a rotor excitation coil and a rotor output coil, said rotor excitation coil receiving said~~ which is a coil to receive a~~ resolver excitation signal transmitted from said stator excitation coil section, ~~and a~~ said rotor output coil ~~which is a coil to generate an output~~ generating said signal corresponding to said rotation angle and communicating said signal to said stator output coil section, and

said rotor excitation coil and said rotor output coil~~ are provided on the same single~~ being operatively connected to said rotor iron core.

4. (Currently amended) The brush-less resolver according to claim 2~~, wherein~~ further comprising at least one of~~ the~~ a rotor shaft operatively connected to said rotor~~ or~~ and a case~~ is omitted~~ operatively connected to said stator.

5. (Currently amended) The brush-less resolver according to~~ claim 3~~ claim 2, wherein said stator~~ comprises~~ coil includes a stator excitation coil section and a stator output coil section, said stator excitation coil section capable of being~~ which is a coil~~ excited by an associated AC voltage for transmitting~~ a~~ said resolver excitation signal from said stator to said rotor~~ and a~~, said stator output coil section~~ which is a coil for~~ outputting a signal corresponding to~~ the~~ said rotation angle to be detected and appearing on the rotor[[,]];

at least one of said stator excitation coil section~~ or~~ and said stator output coil section~~ is provided with coils with two phases; one~~ including a first coil operating at a first phase having a sine-wave distribution and~~ the other having~~ a second coil operating at a second phase that is shifted by 90° ~~(hereinafter referred to as "phases differing 90° from each other" or "phases differing from each other")~~ from said first phase[[,]];~~ and~~

said~~ rotor comprises a~~ rotor coil~~ section~~ including a rotor excitation coil and a rotor output coil, said rotor excitation coil receiving said~~ which is a coil to receive a~~ resolver excitation signal transmitted from said stator excitation coil section, ~~and a~~ said rotor output coil~~ which is a coil to generate an output~~ generating said signal corresponding to said rotation angle and communicating said signal to said stator output coil section, and

said rotor excitation coil and said rotor output coil~~ are coils with~~ operating at phases differing 90° from each other.

6. (Currently amended) The brush-less resolver according to claim 5, wherein ~~both~~ said stator excitation coil section and said rotor excitation coil form an excitation function block having a first number of pole pairs, and said stator output coil section and said rotor output coil form an output function block having a second number of pole pairs that is different from said first number of pole pairs ~~are provided with coils with two phases differing 90° from each other and it is possible to select from among three types of signal processing system; 2-phase excitation 2-phase output, 1-phase excitation 2-phase output or 2-phase excitation 1-phase output by selecting a phase with which an excitation voltage is applied and a phase with which an output signal is extracted~~.

7. (Currently amended) The brush-less resolver according to ~~claim 3~~ claim 6, wherein ~~it is possible to obtain~~ an angle signal with ~~the~~ a number of revolutions N times one rotation of ~~the~~ said brush-less resolver ~~(N is an integer equal to or greater than 1 and an arbitrary number) by arbitrarily setting at least any one of combinations of the number of slots of any one of said stator iron core or said rotor iron core, the~~ is established by a relationship between at least said first number of pole pairs ~~in an~~ of said excitation function block ~~made up of said stator excitation coil section and said rotor excitation coil~~ and ~~the~~ said second number of pole pairs ~~in an~~ of said output function block ~~made up of said stator output coil section and said rotor output coil~~.

8. (Currently amended) The brush-less resolver of ~~claim 5~~ claim 7, wherein ~~the~~ said relationship between ~~the~~ said first number of pole pairs ~~m~~ in said excitation function block and said second number of pole pairs ~~n~~ in said output function block is established by the equation m-n=1 ~~(where both m and n are positive integers and arbitrary numbers), opposite phases in phase rotation are set in the wiring between the rotor excitation coil and the rotor output coil in said rotor, thereby constructing~~ where m represents said first number of pole pairs and n represents said second number of pole pairs, and such that a brush-less resolver with an axial double angle of one (1) is formed that is capable of obtaining an angle signal corresponding to one rotation by one rotation of ~~the~~ said resolver in a first rotational direction.

9. (Currently amended) The brush-less resolver of ~~claim 5~~ claim 9, wherein ~~the~~ said relationship between ~~the~~ said first number of pole pairs ~~m~~ in said excitation function block and said second number of pole pairs ~~n~~ in said output function block is established by the equation n-m=1 ~~(where both m and n are positive integers and arbitrary numbers), opposite phases in phase rotation are set in the wiring between the rotor excitation coil and the rotor output coil in said rotor, thereby constructing~~ where m represents said first number of pole pairs and n represents said second number of pole pairs, and such that a brush-less resolver with an axial double angle of one (1) is formed that is capable of obtaining an angle signal corresponding to one rotation by one rotation of the resolver in ~~the opposite~~ a second rotation direction opposite said first rotational direction.

10.-21. (Cancelled)

22. (New) A brush-less resolver comprising:

a set of a stator and a rotor, said stator including a stator iron core and a stator coil operatively connected to said stator iron core, said rotor including a rotor iron core and a rotor coil operatively connected to said rotor iron core;

said stator coil including a stator excitation coil section and a stator output coil section that are both provided on said stator iron core, said stator excitation coil section adapted to be excited by an associated AC voltage for transmitting a resolver excitation signal to said rotor, said stator excitation coil section including a plurality of coils with a first coil having a first phase and a second coil having a second phase at 90 degrees from said first phase of said first coil, said stator output coil section operative to output a signal corresponding to a rotation to be detected and appearing on said rotor;

said rotor coil including a rotor excitation coil and a rotor output coil that are both provided on said rotor iron core, said rotor excitation coil operative to receive said resolver excitation signal transmitted from said stator excitation coil section, said rotor output coil operative to generate an output signal to said stator output coil section such that said stator output coil can generate said signal corresponding to said rotation to be detected and appearing on said rotor;

said stator excitation coil section and said rotor excitation coil forming an excitation function block including a first number of pole pairs, said stator output coil section and said rotor output coil forming an output function block including a second number of pole pairs that is different from said first number of pole pairs such that said excitation function block and said output function block are operatively interrelated as a function of said first and second numbers of pole pairs.

23. (New) A brush-less resolver according to claim 22, wherein said excitation function block generates excitation signals E_1 and E_2, where:

$$E_1 = E\sin\omega t; \text{ and,}$$

$$E_2 = E\cos\omega t;$$

such that when an associated AC voltage is applied to both of said first and second coils in said stator excitation coil section, said output function block generates output signals E_5 and E_6, where:

$$E_5 = KE\sin\{\omega t+(m+n)\theta\}; \text{ and,}$$

$$E_6 = KE\cos\{\omega t+(m+n)\theta\};$$

where K is a transformer ratio, E is an input signal, ω is an angular velocity, t is a time, m is said first number of pole pairs, n is said second number of pole pairs, and θ is a rotation angle.

24. (New) A brush-less resolver according to claim 22, wherein said excitation function block generates excitation signals E_1 and E_2, where:

$$E_1 = E\sin\omega t; \text{ and,}$$

$$E_2 = E\cos\omega t;$$

such that when an associated AC voltage is applied to both of said first and second coils in said stator excitation coil section, said output function block generates output signals E_5 and E_6, where:

$$E_5 = KE\sin\{\omega t+(m-n)\theta\}; \text{ and,}$$

$$E_6 = KE\cos\{\omega t+(m-n)\theta\};$$

where K is a transformer ratio, E is an input signal, ω is an angular velocity, t is a time, m is said first number of pole pairs, n is said second number of pole pairs, and θ is a rotation angle.

25. (New) A brush-less resolver according to claim 22, wherein said excitation function block generates excitation signal E_1, where:

$$E_1 = E\sin\omega t;$$

such that when an associated AC voltage is applied to said first coil in said stator excitation coil section, said output function block generates output signals E_5 and E_6, where:

$$E_5 = KE_1\cos\{(m+n)\theta\}; \text{ and,}$$

$$E_6 = KE_1\sin\{(m+n)\theta\};$$

where K is a transformer ratio, E_1 is an input signal, m is said first number of pole pairs, n is said second number of pole pairs, and θ is a rotation angle.

26. (New) A brush-less resolver according to claim 22, wherein said excitation function block generates excitation signal E_1, where:

$$E_1 = E\sin\omega t;$$

such that when an associated AC voltage is applied to said first coil in said stator excitation coil section, said output function block generates output signals E_5 and E_6, where:

$$E_5 = KE_1\cos\{(m-n)\theta\}; \text{ and,}$$

$$E_6 = KE_1\sin\{(m-n)\theta\};$$

where K is a transformer ratio, E_1 is an input signal, m is said first number of pole pairs, n is said second number of pole pairs, and θ is a rotation angle.

27. (New) A brush-less resolver according to claim 22, wherein said excitation function block generates excitation signals E_1 and E_2, where:

$$E_1 = E\sin\omega t; \text{ and,}$$

$$E_2 = E\cos\omega t;$$

such that when an associated AC voltage is applied to both of said first and second coils in said stator excitation coil section, said output function block generates output signal E_5, where:

$$E_5 = KE\sin\{\omega t+(m+n)\theta\};$$

where K is a transformer ratio, E is an input signal, ω is an angular velocity, t is a time, m is said first number of pole pairs, n is said second number of pole pairs, and θ is a rotation angle.

28. (New) A brush-less resolver according to claim 22, wherein said excitation function block generates excitation signals E_1 and E_2, where:

$$E_1 = E\sin\omega t; \text{ and,}$$

$$E_2 = E\cos\omega t;$$

such that when an associated AC voltage is applied to both of said first and second coils in said stator excitation coil section, said output function block generates output signal E_5, where:

$$E_5 = KE\sin\{\omega t+(m-n)\theta\};$$

where K is a transformer ratio, E is an input signal, ω is an angular velocity, t is a time, m is said first number of pole pairs, n is said second number of pole pairs, and θ is a rotation angle.

29. (New) A brush-less resolver according to claim 22, wherein said first number of pole pairs and said second number of pole pairs are each a positive integer and an arbitrary number.

30. (New) A method of constructing a brush-less resolver that includes a stator and a rotor, said method comprising:

a) providing a stator iron core;

b) forming a stator coil on said stator iron core with said stator coil including a stator excitation coil section and a stator output coil section, said stator excitation coil section adapted to be excited by an associated AC voltage for transmitting a resolver excitation signal to said rotor, said stator excitation coil section including a plurality of coils with a first coil having a first phase and a second coil having a second phase at 90 degrees from said first phase of said first coil, said stator output coil section operative to output a signal corresponding to a rotation to be detected and appearing on said rotor;

c) providing a rotor iron core;

d) forming a rotor coil on said rotor iron core with said rotor coil including a rotor excitation coil and a rotor output coil;

e) supporting said rotor iron and said rotor coil within said stator iron core and said stator coil such that said rotor excitation coil is operative to receive said resolver excitation signal transmitted from said stator excitation coil section and such that said rotor output coil is operative to transmit an output signal to said stator output coil section such that said stator output coil can generate said signal corresponding to said rotation to be detected and appearing on said rotor.

31. (New) A method according to claim 30, wherein said action of supporting in e) includes forming an excitation function block from said stator excitation coil section and said rotor excitation coil that includes a first number of pole pairs and forming an output function block from said stator output coil section and said rotor output coil that includes a second number of pole pairs that is different from said first number of pole pairs.